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Patent claims

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1. A twin clutch transmission (10), in which
- a transmission input shaft (11) and a transmission output shaft (12) are arranged coaxially with respect to one another, and
  - two countershafts (16, 33) are arranged, offset in parallel with respect to one another and to the transmission input shaft (11) and transmission output shaft (12),
- characterized
- in that a direct gear is provided, and otherwise
- all the even-numbered forward gears are assigned solely to one countershaft (33), and
  - all the odd-numbered forward gears are assigned solely to the other countershaft (16),
- and there being arranged coaxially on the transmission output shaft (12), offset axially with respect to a shift sleeve (38) assigned to the direct gear and to a further forward gear, a further shift sleeve (24) assigned to two forward gears, and there lying, offset axially with respect to said two shift sleeves (38, 24), a shift sleeve plane in which are arranged two further shift sleeves (32, 28), each of which is assigned in each case to one of the two countershafts (33, 16), each forward gear, with the exception of the direct gear, taking place via two gearwheel stages.

2. The twin clutch transmission as claimed in patent claim 1, characterized in that the twin clutch transmission (10) is installed in a motor vehicle having an engine arranged longitudinally in the direction of travel and has
- n sequentially power-shiftable forward gears,

- two intermediate shafts (14, 15) which are arranged coaxially with respect to one another and one of which is designed as a hollow shaft (14), and
  - 5 - two friction clutches (K1, K2) arranged concentrically with respect to the intermediate shafts (14, 15),
- all the forward gears being actuated in each case by the selection of a single shift sleeve assigned to the  
10 respective forward gear, and one of these forward gears being designed as a direct gear.

3. The twin clutch transmission as claimed in patent claim 2, characterized in that the direct gear is  
15 designed as forward gear n, n-1 or n-2.

4. The twin clutch transmission as claimed in one of the preceding patent claims, characterized in that the reversal of direction of rotation in the reversing mode  
20 is implemented by means of an additional intermediate wheel.

5. The twin clutch transmission as claimed in one of patent claims 1 to 3, characterized in that the  
25 reversal of direction of rotation in the reversing mode is implemented by means of an additional intermediate shaft (41).

6. The twin clutch transmission as claimed in one of patent claims 1 to 3, characterized in that the  
30 reversal of direction of rotation in the reversing mode is implemented solely by means of gearwheels which are arranged coaxially with respect to the input and the output shaft or to the two countershafts.

35 7. The twin clutch transmission as claimed in one of the preceding patent claims, characterized in that the number s of the shift sleeves mounted in the twin

clutch transmission is calculated from the number  $n$  of forward gears, for an odd number  $n$  from:

$$s = \frac{n+1}{2},$$

5 and, for an even number  $n$ , from:

$$s = \frac{n+2}{2}$$

8. The twin clutch transmission as claimed in one of the preceding patent claims, characterized in that the  
10 two countershafts (16, 33) and the input shaft (11) lie at lease approximately in one plane.

9. The twin clutch transmission as claimed in one of the preceding patent claims, characterized in that the  
15 two countershafts (16, 33) and the input shaft (11) are arranged in triangular form.

10. The twin clutch transmission as claimed in one of the preceding patent claims, characterized in that at  
20 least one gearwheel lies in different gear stages in the torque path.

11. The twin clutch transmission as claimed in one of the preceding patent claims, characterized in that the  
25 first forward gear (G1) and a reverse gear (R1) are arranged in such a way that, for alternately shifting back and forth between the first forward gear and this reverse gear ("rocking cycle"), only an alternate actuation of the input-side clutches (K1 and K2),  
30 without the actuation of the shift sleeve, is required.

12. The twin clutch transmission as claimed in patent claim 11, characterized in that this said reverse gear for alternately shifting back and forth with the first  
35 forward gear is the first reverse gear (R1).

13. The twin clutch transmission as claimed in one of the preceding patent claims, characterized in that in each case a shift sleeve arranged on a countershaft and a shift sleeve arranged coaxially with respect to the  
5 main shaft have exactly or approximately the same position with respect to the longitudinal direction of the transmission.